CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

An ISO 9001:2008 Certified Company

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/Ward No.12/RS/GSB-1/AL/2015-16

Date : 10.02.2016

ATTERBERG LIMITS TEST FOR GSB (CLOSE GRADED)
IS : 2720 (Part - 5)

Customer : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of work : Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.

Reference : AEE/SSD/PR/ QC/164/2015-16 Dated: 08.02.2016

Date of Testing : 10.02.2016

As per MORTH Table : 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	23.20	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

As per IS: 2720 Part 5

Note:

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****

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Chief Executive Officer

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Job No.: CTCE/BBMP/Ward No.12/RS/GSB-1/GR/2015-16

Date : 10.02.2016

GRADATION FOR GSB-I (CLOSE GRADED)
IS: 2720 (Part 4)

Customer : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manager (West),** KRIDL, Bangalore.

Name of work : Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.

Reference : AEE/SSD/PR/ QC/164/2015-16 Dated: 08.02.2016

Date of Testing : 10.02.2016

Sample Source : GSB Mix Plant Bangalore. **Oven Dry Wt (gm) :** 9700

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	100	100
53.0	850	850	8.76	91.24	80-100
26.50	2050	2900	29.90	70.10	55-90
9.50	1660	4560	47.01	52.99	35-65
4.75	1320	5880	60.62	39.38	25-55
2.36	1325	7205	74.28	25.72	20-40
0.425	1200	8405	86.65	13.35	10-25
0.075	930	9335	96.24	3.76	3-10
PAN	365				
Total	9700				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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Job No.: CTCE/BBMP/Ward No.12/RS/WMM/S-T/2015-16 15.02.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of Work	Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.
Reference	AEE/SSD/PR/ QC/164/2015-16 Dated: 08.02.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	15.02.2016

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Result : Flakiness Index = **12.35%**

Elongation Index = **13.90%**

Result : Combined Flakiness & Elongation index **26.25%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/Ward No.12/RS/WMM/AIV/2015-16 15.02.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manager (West),** KRIDL, Bangalore.
Name of the Work	Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.
Reference	AEE/SSD/PR/ QC/164/2015-16 Dated: 08.02.2016
Sample ID	WMM Layer
Type of Mix	Wet Mix macadam
Date of Testing	15.02.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	392	393	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	88	89	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	304	304	
4	Aggregate Impact value = percent fines	22.45	22.65	
	100* (W_2/W_1)%			22.55

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Chief Executive Officer

AE - 12
ಸಹಾಯಕ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಭಿಯಂತರರು
ಪೆಟ್ಟಿಕಳ್ಳ ಉಪವಿಭಾಗ 15/2 ಚಿಕ್ಕಳ್ಳ ವಲಯ
ಬೃಹತ್ ಬೆಂಗಳೂರು ಪಾಲಿಕೆ
ಬಿಸ್.ಎಂ ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು

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T-2377

Job No.: CTCE/BBMP/Ward No.12/RS/CSR-03/1089a/QB(BM)/2015-16 08.03.2016

TEST REPORT ON DETERMINATION OF BITUMEN CHARACTERISTICS

*CUSTOMER	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
*AGENCY	:	**Technical Manager (West),** KRIDL, Bangalore.
*NAME OF THE WORK	:	Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	:	AEE/SSD/PR/ QC/164/2015-16 Dated: 08.02.2016
*SAMPLE ID	:	Bitumen
DATE OF SAMPLING	:	05.03.2016
DATE OF TESTING	:	08.03.2016

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The results of the tests conducted on the bitumen sample.

Sl. No	Description	Test Method as per IS	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 ^{0}C, 1/10 mm	IS :1203 -1978 (RA-2009)	85	80 to 100
2	Softening point, ^{0}C	IS :1205 -1978 (RA-2009)	45	Min. 40
3	Ductility at 27^{0}C, cm	IS :1208 -1978 (RA-2009)	100 >	Min. 75
4	Flash Point, ^{0}C	IS :1209 -1978 (RA-2009)	295	Min. 220

*Information is furnished by the Customer/Representative.

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⇒ Any Query regarding the report must be reported within 30 days from the date of testing.

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AE-12
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ಬೃಹತ್ ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಆಸ್.ಎಂ. ರಸ್ತೆ, ರವೀಂದ್ರನಗರ, ಬೆಂಗಳೂರು.

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Job No.: CTCE/BBMP/Ward No.12/RS/SDBC/Bit/2015-16 11.03.2016

BITUMEN CONTENT DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 164

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/SSD/PR/ QC/164/2015-16 Dated: 08.02.2016
SAMPLE I/D	Roads at Kuvempu nagara Ward No.12, BBMP, Bangalore
DATE OF TESTING	11.03.2016

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BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	25	26.00
7. Bitumen content in %	5.00	5.20
8. Average	**5.10**	

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Ae-12

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Job No.: CTCE/BBMP/Ward No.12/RS/SDBC/Bit/2015-16 11.03.2016

BITUMEN CONTENT GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

AASHTO T 30

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manager (West),** KRIDL, Bangalore.
NAME OF THE WORK	Asphalting to Cross and Main roads at Kuvempu nagara, Chikkasandra in ward No.12 of Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	AEE/SSD/PR/QC/164/2015-16 Dated: 08.02.2016
SAMPLE I/D	Roads at Kuvempu nagara Ward No.12, BBMP, Bangalore
DATE OF TESTING	11.03.2016

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GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
13.2	0	0	0	100	100
9.5	42.5	8.95	8.95	91.05	90-100
4.75	255.3	53.75	62.69	37.31	35-51
2.36	56.2	11.83	74.53	25.47	24-39
1.18	46.2	9.73	84.25	15.75	15-30
0.3	28.3	5.96	90.21	9.79	9-19
0.075	27.6	5.81	96.02	3.98	3-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-15 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
st be reported wi	0	0	0	100	100
9.5	35.3	7.45	7.45	92.55	90-100
4.75	255.1	53.82	61.27	38.73	35-51
2.36	48.3	10.19	71.46	28.54	24-39
1.18	37.3	7.87	79.32	20.68	15-30
0.3	22.3	4.70	84.03	15.97	9-19
0.075	45.6	9.62	93.65	6.35	3-8

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